

New Student Admission Information System (PPDB) at the State Catholic Religious High School of Keerom

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ABSTRACT

Implementation of the New Student Admissions (PPDB) information system at Keerom State Catholic High School using the Waterfall software development method. The development stages include needs analysis, system design, implementation, testing, and maintenance. System testing is carried out using the blackbox method, which is specifically focused on system functionality without looking at the internal code structure. The test results show that all system features, such as online registration, setting periods, and data verification, run well according to needs. The implementation of this PPDB information system has been proven to provide convenience for the committee in managing the admissions process, from registration to selection, and for prospective students in registering boldly. With this system, the PPDB process becomes more efficient, transparent, and well-documented. This success shows that the development and testing approach used is appropriate and effective for the school's needs.

INTRODUCTION

The new student admission process (PPDB) is one of the important stages in organizing education at various levels of schools, including at the State Catholic High School (SMAKN) Keerom. As an educational institution that aims to provide quality education in an environment based on Catholic religious values, SMAKN Keerom faces various challenges in managing the new student admission process. A good and structured PPDB process is essential so that schools can filter prospective students who meet the criteria and standards that have been set.(Nugraha et al., 2024).

However, in reality, the PPDB process at SMAKN Keerom is still carried out manually, relying on printed forms and physical data recording. This causes various problems that have a negative impact on the effectiveness and efficiency of the student admissions process. Some of the main problems that arise from this manual system include the long time required for data input, the high cost of printing forms, and the need for more human resources (HR) to serve prospective students. On the other hand, the number of prospective students who register each year tends to increase, thus increasing the workload for the PPDB committee and increasing the potential for errors in the selection process.(Sekar Dewi et al., 2018).

In the digital era like today, the use of information technology in various aspects of life has become an urgent need, including in the field of education. By utilizing information systems, various processes that previously took a lot of time and money can be simplified and optimized. Therefore, the solution offered to overcome the problems at SMAKN Keerom is to build a digital-based New Student Admissions Information System (PPDB). This system is expected to be able to automate the PPDB process, starting from registration of prospective students, data processing, to the announcement of selection results.(Fadhli et al., 2024).

Problems in the Student Admissions Process at SMAKN Keerom The Process is Still Manual The PPDB process at SMAKN Keerom currently still uses a manual system, where prospective students must fill out a physical form and submit it directly to the school. The data from this form is then manually inputted by the committee into the school's recording system. This manual data input process not only takes a long time, but is also prone to input errors that can affect the validity of the data received by the school. In some cases, data input errors can result in prospective students not being registered properly or even failing to take part in the selection process.

Long Time in Data Input One of the impacts of the manual process is the long time required to input prospective student data. Each prospective student must fill out a form with personal data and other information relevant to the selection process. After that, the PPDB committee must input each data into the recording system manually. With the increasing number of prospective students registering each year, the time required to input this data also increases, thus slowing down the entire admissions process. This delay is not only detrimental to the school, but also prospective students and parents who have to wait longer to get certainty about the selection results(Sayuti et al., 2024).

High Costs for Printing Forms The student admission process that still uses physical forms also requires additional costs to print forms in large quantities. Every year, the PPDB committee must print hundreds to thousands of registration forms that will be given to prospective students. The cost of printing these forms can certainly burden the school budget, especially if the number of prospective students who register continues to increase. In addition, the use of physical forms is also not environmentally friendly because it produces quite a lot of paper waste.

Need for More Human Resources The manual process of student admissions also requires more human resources to serve prospective students and input data. Every year, the PPDB committee must deploy additional personnel to assist in the registration process and processing of prospective student data. The need for more human resources not only increases the workload for schools, but also increases the operational costs that must be incurred to pay for additional workers. In addition, the involvement of many people in this process also increases the risk of errors and inefficiencies.

Increase in the Number of Prospective Students SMAKN Keerom has experienced an increase in the number of prospective students who register each year. This is a positive indication that this school is in demand by the community, but on the other hand it also poses its own challenges for the school in managing the PPDB process. The more prospective students who register, the greater the workload of the PPDB committee in carrying out verification and selection. If not balanced with a more efficient system, this increase in the number of applicants can extend the duration of the admissions process and increase the possibility of errors.

LITERATURE REVIEW

Some studies related to PPDB include the following, the first study Design and Construction of a Website-Based New Student Admissions Information System (Case Study of SMP Amal Luhur Medan) This study aims to design and build a website-based new student admissions information system at SMP Amal Luhur Medan. This system is designed to facilitate the process of registration, selection, and announcement of new student admission results. The research methods used include needs analysis, system design, implementation, and testing. The results of the study indicate that the information system built can increase the efficiency and effectiveness of the new student admissions process. This system also provides easy access for prospective students and parents in registering online (Pratama et al., 2024). The difference in this study is by adding a feature to download applicant data in the form of an excel file. The second study is the Design of UI/UX for New Student Admissions Based on a Website Using the User Centered Design Method. The purpose of this study is to help schools overcome existing problems by providing a UI/UX design for new student admissions at SMK Setianegara based on a website. The design method used by researchers is the user centered design method.(Puspita Hannah & Nur Kholiza,

2024). the difference in this study is the method used is the waterfall method. The third study is the Development of a Web-Based New Student Admissions Application (Case Study: SMKN 8 Kab. Tangerang) This development aims to facilitate prospective students in the registration process, as well as enable schools to manage student admissions information better. Efforts to increase efficiency and facilitate prospective new students by developing a more dynamic website application (Rosdiana & Sutriyatna, 2024). The difference in this study is in the case study and research object. The fourth study is the Development of a Website-Based New Student Admissions Information System Using the Waterfall Method, this study aims to develop a New Student Admissions Information System (PPDB) in Islamic boarding schools using the Waterfall methodology. The background to the development of this system is based on the need for increased efficiency and accuracy in the process of accepting new students, as well as challenges in complex data management. (Asher & Hidayat, 2024). The difference in this study is that the object of the study is located at SMAK Keerom. The fifth study is the Design and Construction of the New Student Admissions Information System (PPDB) of Telkom 2 Medan Vocational High School Using Codeigniter. This study aims to provide real contributions to society and education at SMK Telkom 2 Medan. (Satria et al., 2023). The difference in this research is that the object and case study are different.

METHODOLOGY

The Waterfall model is one of the most classic and widely used software development models. This model follows a linear and sequential approach, where each stage must be completed before moving on to the next stage. In this method, software development is carried out in stages with a clear sequence (Asher & Hidayat, 2024; Candra Budi Susila, 2021; Leonardo et al., 2022; Sadi et al., 2019; Sasmito, 2017; Sukmana, 2021).

1. Needs Analysis

The first stage in the waterfall model is needs analysis. At this stage, software developers together with users or clients collect and document all functional and non-functional requirements of the system to be developed. The information collected includes what is expected from the system, how the system should work, and system specifications and limitations.

2. Design (System Design)

After the system requirements are clearly determined, the next stage is system design. At this stage, the system architecture is designed based on the needs that have been collected. This design involves specifications regarding hardware and software, data structures, algorithms, user interfaces, and how system components will be implemented and integrated.

3. Implementation (Development/Coding)

At this stage, based on the design documents that have been created, developers begin implementing the system in the form of program code. This

stage is often referred to as coding. Each module or part of the system is developed and tested individually.

4. Testing (Testing)

After all parts of the system have been developed, the next stage is integration and testing. At this stage, the modules that have been implemented are integrated into a complete system. Testing is performed to ensure that the system functions according to predetermined specifications.

RESEARCH RESULT

1. Use case diagram

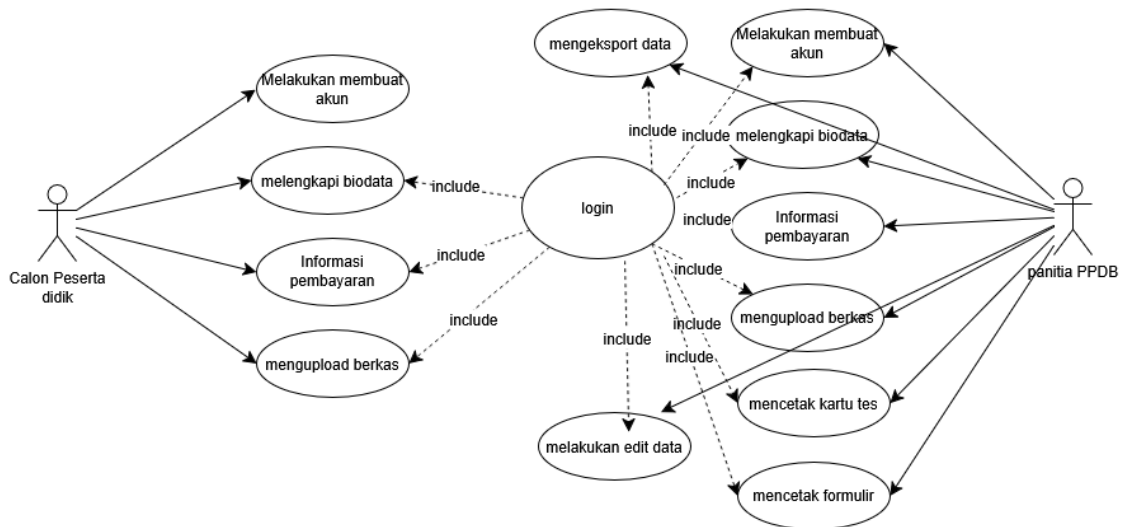


Figure 1. Use case diagram

Use cases in PPDB (New Student Admissions) describe the interaction between users and the system, such as student registration, data verification, selection, and announcement of results. Each use case helps to understand the process flow and the role of users in the system systematically and structured.

2. Database Design

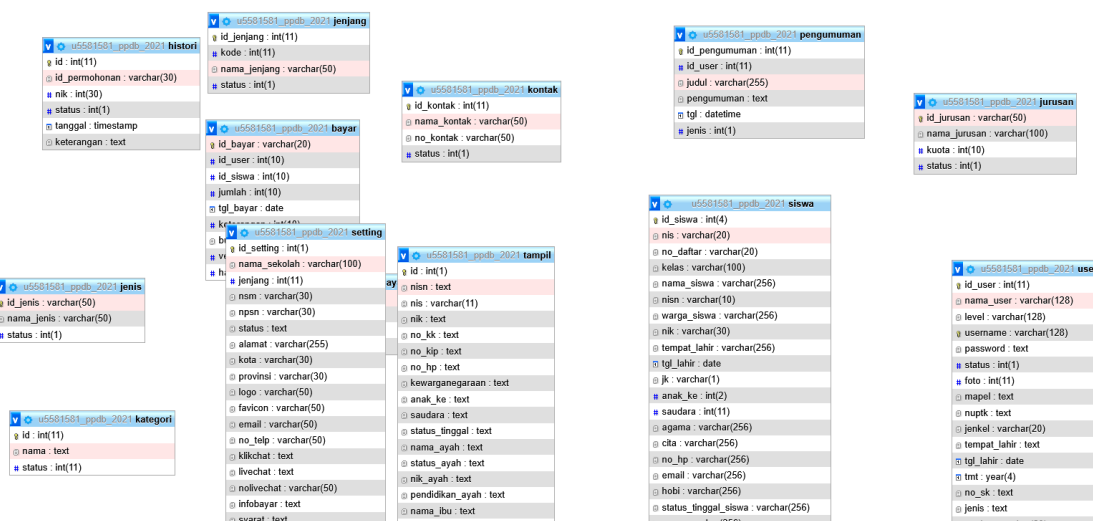


Figure 2. Database design

3. User Interface

The user interface is a display of the new student admissions information system, which consists of several forms as follows:

a. Dashboard page



Figure 3. Dashboard page

The PPDB dashboard page is the main display of the system that presents a summary of important information such as information, registration requirements, and contacts. The dashboard makes it easy for admins to monitor the registration process quickly, efficiently, and in a structured manner, and provides direct access to the main features of the system.

b. Prospective student account registration page



Figure 4. Account Registration Page

The prospective student account registration page is used to create a new account in the PPDB system. Prospective participants fill in personal data such as name, NISN, email, and password. The goal is for participants to be able to access the system, fill out forms, upload files, and monitor registration status independently.

c. Prospective student account page

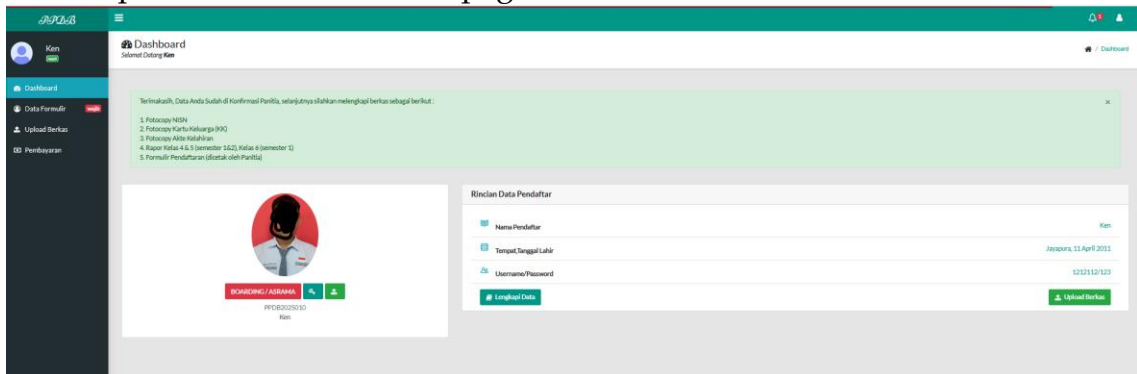


Figure 5. Prospective student account page

The prospective student account page is a private area in the PPDB system that can be accessed after logging in. In it, participants can view and edit personal data, upload files, print forms, and monitor registration status and selection results directly and integrated in one easy-to-use display.

d. Admin account page

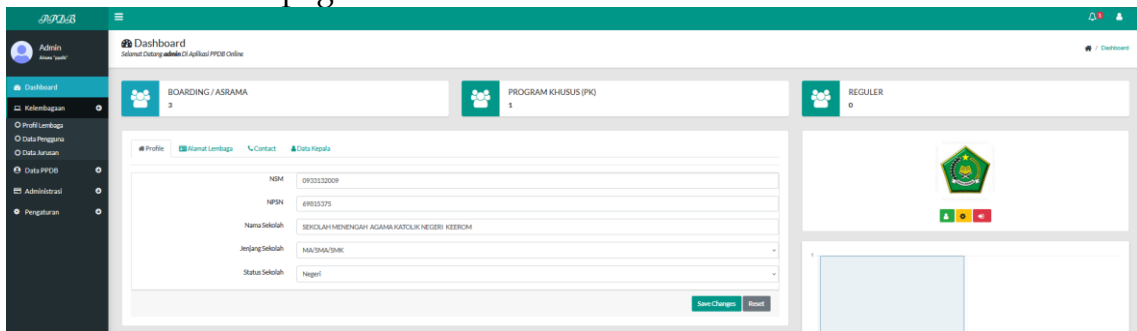


Figure 6. Admin account page

The admin account page is a control center for PPDB officers to manage the entire registration process. Admins can verify participant data, set schedules, view statistics, print reports, and manage users. This page is designed to facilitate supervision and decision making quickly and efficiently.

e. System User data page

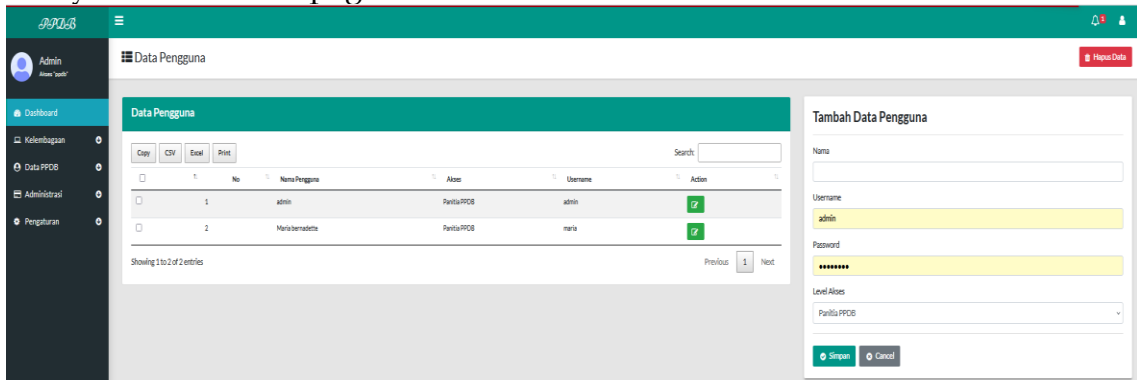
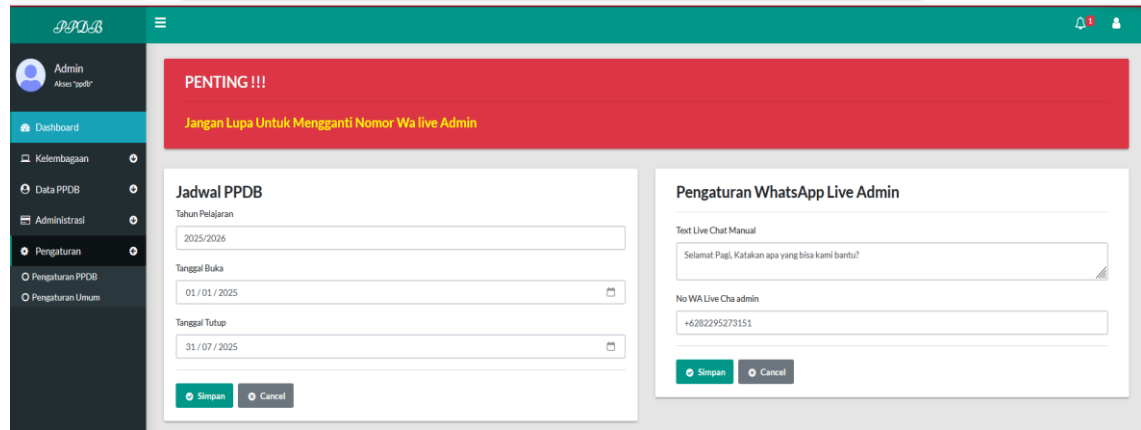


Figure 7. System user data page

The system user data page displays a complete list of registered accounts, both admin and participant. Admin can view, add, edit, or delete user data. This feature is important to ensure that system access management runs safely, orderly, and according to the role of each user in the PPDB process.

f. PPDB settings page



Gambar 8. Halaman pengaturan penerimaan PPDB

The PPDB acceptance period setting page allows admins to set the start and end times for registration. This feature is important for automatically setting the schedule for accepting new students, ensuring the process runs according to the provisions, and avoiding registration outside the specified period.

4. Testing Result

The blackbox method in the PPDB system is used to test the main functions without looking at the program code. Testing is focused on input and output, such as account registration, login, and data verification. The goal is to ensure that each feature runs as expected and provides the correct response to user actions.

Table 1. Blackbox method test results

No	Tested Features	Test Scenario	Input	Expected results	Remarks
1	Account Registration	Register with complete and valid data	Name, NISN, Email, Password	Account successfully created and redirected to login page	☑
2	Account Registration	Register with blank NISN	NISN is left blank	An error message is displayed: "NISN must be filled in"	☑

3	Prospective Student Login	Login with wrong password	Email is correct, password is incorrect	Error message: "Wrong email or password"	<input checked="" type="checkbox"/>
4	Upload Files	Upload PDF or JPG files	File: image.jpg / document.pdf	Document saved success message	<input checked="" type="checkbox"/>
5	File Verification by Admin	Admin verifies complete files	Click the "Verify" button	Participant status changes to "Verified"	<input checked="" type="checkbox"/>
6	View Selection Results	Participants open the selection results page	Click the "Selection Results" menu	Displayed status: Accepted / Not Accepted	<input checked="" type="checkbox"/>
7	Student Data Input by Admin	Admin fills in all data correctly	Name, NISN, Gender, etc.	Student data is saved and appears in the participant list.	<input checked="" type="checkbox"/>

Based on the results of blackbox testing in table 1 on the PPDB information system, all main features run well according to their functions. The account registration process, participant login, file upload, verification by the admin, to the appearance of the selection results have been successfully tested and provide output that is in accordance with the test scenario. Input validation and error messages also appear correctly. This shows that the system is ready to be used effectively in the process of accepting new students.

DISCUSSION

The implementation of the New Student Admissions Information System (PPDB) at Keerom State Catholic High School is a strategic step in improving the quality of education services, especially in terms of administration and transparency. This system not only makes it easier for schools to manage prospective student data, but also provides wider and faster access to information to the public, especially prospective students and parents/guardians. From the results of the initial implementation, the information system that was built was able to overcome various obstacles that have arisen in the manual PPDB process, such as data duplication, long queues, and delays in the selection process. With a digital system, registration can be done online, so prospective students in remote areas do not need to come directly to the school to submit files or take part in the initial selection stage. In addition, the automatic verification feature and ranking system based on certain values or criteria allow the selection process to be more objective and transparent. This is important to maintain public trust in school institutions, especially because

SMAKN Keerom carries out a religious education mission that upholds honesty and integrity. However, the challenges faced are not small. Limited internet infrastructure in several areas of Keerom is still a technical obstacle, as is the unequal digital capabilities of some people. Therefore, the blended system approach combines online and offline services—can be a temporary solution while continuing to improve digital literacy and supporting infrastructure. With system optimization and ongoing socialization, this information system-based PPDB is believed to be the foundation for sustainable digital transformation of education in Keerom and the surrounding areas.

CONCLUSIONS AND RECOMMENDATIONS

The implementation of the PPDB information system at SMAKN Keerom has succeeded in increasing efficiency and transparency in the process of accepting new students. With this system, prospective students can register online, upload files, and monitor the registration status independently. Admins also find it easier to manage participant data, verify, and announce selection results. The previously manual process is now more structured and automated, reducing the potential for errors and speeding up processing time. Overall, the implementation of this system has a positive impact on the smooth operation of PPDB and the user experience at school.

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